Rose Hill Regional Landfill Superfund Site

Explanation of Significant Differences

September 2008

Prepared by:

The United States Environmental Protection Agency

Region 1, New England

Technical Assistance Provided by:

Rhode Island Department of Environmental Management

as Lead Agency

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Cover Photo: Aerial image of Rose Hill Regional Landfill taken on June 14, 2008 looking west. Construction activities are complete and cover crops have predominantly taken hold.

[photo by David J. Newton, RPM; pilot in command: Jay C. Newton]

EXPLANATION OF SIGNIFICANT DIFFERENCES

Rose Hill Regional Landfill Superfund Site
South Kingstown, Rhode Island

September 2008

I. INTRODUCTION

This document is an Explanation of Significant Differences (ESD) for the Record of Decision (ROD) for the Rose Hill Regional Landfill Superfund Site (the Site) dated December 20, 1999. The ROD describes the first operable unit (OU1) of a phased approach to remediate contamination caused by the Site, consisting of a source control remedy that will prevent or minimize the continued release of hazardous substances, pollutants or contaminants to the environment. More specifically, the ROD requires the treatment of landfill gas (LFG) emissions through an active internal and perimeter gas collection system by thermal treatment (an enclosed flare) and continued monitoring of the LFG concentrations to assess the need for modifications to the treatment system. This ESD documents the basis for a design decision to build the LFG collection system such that it could be operated in either a passive (venting) or active (combustion) mode. Post-ROD LFG monitoring data currently indicate that this LFG management system can operate passively while providing adequate protection from the ambient air risks identified in the ROD.

A. SITE NAME & LOCATION

Site Name: Rose Hill Regional Landfill Superfund Site

Site Location: South Kingstown, Rhode Island

B. LEAD & SUPPORT AGENCIES

Lead Agency: Rhode Island Department of Environmental Management (RIDEM)

- *Contact: Gary Jablonski, RIDEM Project Manager, (401) 222 -2797 x7148*

Support Agency: United States Environmental Protection Agency (EPA)

- *Contact: David Newton, EPA Remedial Project Manager, (617) 918-1243*

C. LEGAL AUTHORITY FOR ESD

This ESD is prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9617(c), and Section 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. 300.435(c)(2)(i), and documents a significant change to a portion of the remedy selected in the ROD for the Rose Hill Site. In accordance with Office of Solid Waste and Emergency Response Directive 9200.1-23P, EPA has

determined that the changes to the remedial action stated herein significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. An ESD is therefore appropriate in this case.

D. SUMMARY OF CIRCUMSTANCES NECESSITATING THIS ESD

This ESD is being issued as a result of a reassessment of the landfill gas collection and combustion system proposed in the ROD, in light of updated landfill gas monitoring data collected in 2003 and 2004, as well as during the spring and summer of 2008, after the completion of the source control remedy (construction of the landfill cap) required by the ROD.

Four Contaminants of Potential Concern (COPCs) were identified in the ROD: Vinyl Chloride, 1,1-Dichloroethene, Benzene, and 1,1,2,2-Tetrachloroethane. Data on which the ROD was based indicated that several of these compounds exist in the landfill gas at concentrations that exceed the Human Health Preliminary Remediation Goals (PRGs) for ambient air.

In 2002, EPA, with assistance from EPA's Office of Research and Development (ORD) and the National Risk Management Research Laboratory (NRMRL), began to assess fugitive landfill gas emissions from the site. This assessment was conducted in conjunction with a national initiative to develop guidance for conducting an air pathway analysis for landfill gas emissions, and the Rose Hill Landfill site was used as a case study for this guidance. EPA's "Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities" (the Landfill Gas Guidance) became final in September 2005. The Landfill Guidance will be included as an amendment to Action-specific ARARs, Criteria and Guidance, Table 76 of the ROD (see Appendix C herein).

The Landfill Gas Guidance models landfill emissions for at least ten COPCs, including two of the four COPCs cited in the Rose Hill Landfill ROD, vinyl chloride and benzene. In reviewing the Site data collected in 2002 for these two COPCs, the one hour total maximum annual concentrations for vinyl chloride and benzene were 0.01136 ug/m^3 and 0.03 ug/m^3, respectively. Both of these concentrations are lower than the Human Health PRGs for Ambient Air as identified in Table 79 of the ROD. In addition, the maximum methane concentration detected was 0.035%, which is well below the lower explosive limit of 5% for methane.

The Landfill Gas Guidance also modeled Non-Methane Organic Compounds (NMOC) emissions. Using site data collected in 2002, the projected, modeled NMOC emission rate for the year 2005 was 11 mg/yr. This rate is expected to decline due to the declining landfill gas generation rate. A second modeling run by Louis Berger Group (Berger) using more recent data collected in 2003 and 2004 resulted in a projected year 2005 NMOC emission rate of 7 mg/yr, based on EPA's Compilation of Air Pollutant Emission Factors (AP-42) standards, and 18 mg/yr based on Clean Air Act (CAA) standards. The regulatory threshold for landfill gas NMOC emissions is 50 mg/yr. EPA believes that even with the additional material from the Bulky Waste Area of the Site consolidated in

the landfill, future landfill gas emission rates should be well below the regulatory threshold.

During the remedial design field investigation performed by Berger, six test pits were excavated to define the waste limit and to characterize the material for future closure activities in the Solid Waste Area of the Site. Samples of the waste material were measured for organic content to evaluate its potential for generating landfill gas. The organic content of the waste material was low, ranging from 1.1% to 4.8%, with an average of 3.0%. This suggested that gas generation from decomposing organic matter would be low. Berger also performed four modeling scenarios using the EPA's Landfill Gas Estimation Model (LandGEM), and the results of the modeling confirmed a low landfill gas generation rate for the Site (See Appendix A).

The landfill gas laboratory analytical sampling results for the spring and summer of 2008 have not yet been fully validated. However, after reviewing the unvalidated analytical landfill gas data results collected to date, it appears that the results of the 2008 sampling rounds correlate to the landfill gas sampling results collected by Berger in 2004.

These circumstances establish the basis for modifying the landfill gas collection and treatment component of the selected remedy as described in the ROD for OU1, which contemplates an active (combustion) system. Data collected since the ROD was issued indicate that operating a passive (venting) gas system will meet air emissions standards that are protective of human health and the environment.

Assuming that conditions remain stable over time, ARARs are achieved, and adjacent residences are adequately protected, EPA expects that the passive landfill gas ventilation system will be sufficiently protective of human health and the environment.

This ESD and supporting documentation will become part of the Administrative Record for the Site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed:

U.S. Environmental Protection Agency
Records Center
1 Congress Street
Boston, MA 02114
(617) 918-1440

Business Hours
Monday-Friday: 9:00 am - 5:00 pm; (closed first Friday of every month and federal holidays)

RI Department of Environmental Management
235 Promenade Street
Providence, RI 02908
(401) 222-2797 Ext. 7307

Business Hours
Monday-Friday: 8:30 am - 4:00 pm

South Kingstown Public Library
1057 Kingstown Road
Peace Dale, RI 02879
401-789-1555

Business Hours
Monday and Tuesday: 9:00 am – 8:00 pm
Wednesday and Thursday: 9:00 am – 6:00 pm
Friday and Saturday: 9:00 am – 5:00 pm

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND THE SELECTED REMEDY

A. SITE HISTORY

General Site Description and Historical Summary

The Site is located within the Town of South Kingstown, Rhode Island in the village of Peace Dale within Washington County. It lies approximately five miles inland from Narragansett Bay and two miles north of Wakefield, Rhode Island. The Site is bordered by Rose Hill Road to the west, the Saugatucket River to the east, and residential private property to the north and south. Figure 1 in Appendix B shows the Site location with reference to the Town of South Kingstown and the abutting Towns. Prior to 1941, the Site was used for agriculture. Sand and gravel excavation operations were conducted at the Site from at least 1948 through 1963. The Site began landfill operations in 1967 and was operated by the Town of South Kingstown under state permit from RIDEM. For approximately 16 years, the Site received domestic and industrial wastes from residents and industries in the Towns of South Kingstown and Narragansett. In October 1983, the Site reached its state permitted maximum capacity and active land filling operations ceased.

The Site is located in abandoned sand and gravel quarry and encompasses approximately 70 acres. As shown in Figure 2 in Appendix B, the Site consists of three separate and inactive disposal areas or landfills, referred to as the Solid Waste Area (SWA), the Bulky Waste Area (BWA), and the Sewage Sludge Area (SSA).

Two primary surface water bodies flow through the Site, the Saugatucket River and Mitchell Brook. An unnamed brook, west of the Site, flows into the Saugatucket River, and an unnamed tributary, in the northern portion of the Site, flows into Mitchell Brook. The Saugatucket River is classified by the State of Rhode Island as a Class B water body that is suitable for fishing and swimming. Wetland and flood plain habitats are also found adjacent to the disposal areas and are subject to runoff and contamination from the disposal areas. An open excavated area approximately 400 feet north of the disposal areas is currently used for target and skeet shooting. A former sand and gravel bank

exists approximately 200 feet west of the disposal areas. An active transfer station is located southeast of the Site.

B. RESPONSE HISTORY

The Preliminary Assessment Report for the Site was completed in January 1983, followed by a Site Inspection Report completed in September 1985. The Site was proposed for inclusion on the National Priority List (NPL) on June 24, 1988. On October 4, 1989, the Site qualified for final listing on the NPL.

Residents of South Kingstown obtain water from both public and private wells. Private wells within a 3-mile radius of the Site consist of overburden or bedrock wells. Three supply wells for the University of Rhode Island are located approximately 2.7 miles northwest of the Site. Two municipal supply wells for the Kingstown District are located approximately 3-miles northwest of the Site. The University and the District use each other's systems as water supply back up. In 1985, the Town of South Kingstown provided a municipal water line extension to adjacent residences located on Rose Hill Road and dwellings abutting the immediate northern portion of the Site. By 1989, water service was provided to residences on Broad Rock Road. Residences that abut the Site along Rose Hill Road and Pearl's Way north, west, east, and south of the Site are all hooked up to municipal water. Therefore, no other response actions for water supply needs are necessary.

Remedial Investigation/Feasibility Study activities included installing soil gas sampling wells on three landfill disposal areas and along the perimeter of the site (along Rose Hill Road). Initial sampling results indicated the presence of explosive levels of combustible and hazardous gases in the vicinity of residential dwellings abutting the landfill. A unilateral order was issued by EPA to the Town of South Kingstown in March 1993 to address these concerns. As a result, by May 1993, the Town placed gas sensors and alarms at two residences and, in June 1993, razed a third problematic dwelling located at 220 Rose Hill Road.

In 1994 the Town installed a bentonite clay dam around the town water line feeding the residence at 278 Rose Hill Road to prevent landfill gases from entering the residence. The Town also moved the sensor from against the outside basement wall to inside the basement to record methane concentrations inside the dwelling. The Town continues to maintain the equipment and submit data reports to EPA and RIDEM. Monitoring of landfill gas migration both on the site and along the perimeter of Rose Hill Road has occurred on a regular schedule throughout the design and construction of the remedy.

In December 1999, EPA issued the ROD for the Site.

In 2002, RIDEM and EPA entered into a Cooperative Agreement (CA) that identified RIDEM as the lead agency and EPA as the oversight agency for the remedial design activities. The CA also provided for federal funding for the remedial design activities. In 2003 EPA, RIDEM, and the Towns of South Kingstown and Narragansett entered into a Consent Decree setting forth the obligations of the parties in performing the remedy selected in the ROD.

The remedial design and additional field investigations were completed in 2004. The Phase I and Phase II landfill cap construction activities were substantially completed in fall of 2007.

The first year of environmental sampling (landfill gas, groundwater, and surface water) is ongoing. The passive landfill gas mitigation system is currently operating onsite with the option to switch to an active landfill gas mitigation system if the passive system proves through environmental sampling and landfill gas modeling to be inadequate to keep landfill gas emissions below State and Federal standards.

C. SITE RISKS

The principal risks at the Site, as described in the May 1994 Remedial Investigation Final Report, are direct contact with and ingestion of contaminated groundwater and inhalation of landfill gas.

The OU1 Human Health Risk Assessment concluded that compounds of concern in groundwater and air at the SWA may present an unacceptable human health risk (e.g. cancer risk $>10^{-4}$ or HI >1) to area adult residents and adult visitors via ingestion and inhalation.

Results of the baseline ecological risk assessment showed that concentrations of iron and aluminum in surface waters throughout the Site frequently exceeded criteria levels, especially in areas downstream of leachate seeps that were found near the SWA and BWA. A risk to aquatic organisms in the surface waters from exposure to these chemicals of ecological concern was therefore identified. Concentrations of iron and aluminum in leachate also exceeded ambient water quality criteria (AWQC). The risk to aquatic organisms was confirmed by results from leachate toxicity testing, which indicated that the leachate was acutely toxic to aquatic organisms. Additionally, the correlation analysis between benthic community composition and chemical concentrations showed a significant negative correlation between iron concentration and species densities in the surface water of Mitchell Brook and Saugatucket River.

The remedial action objectives established in the ROD therefore required that the remedy: 1) reduce risk to human health from consumption of, and direct contact with, groundwater, 2) reduce the potential exposure of area residents and those at the landfill to landfill gases in ambient and indoor air via inhalation, and 3) reduce contaminant migration via leachate to surface waters and sediments of local water bodies of the State in order to improve water quality and designated uses, including aquatic life support.

D. SUMMARY OF SELECTED REMEDY

The ROD selected a source control remedy. The selected remedy consists of the following:

- Excavate and consolidate BWA landfill materials onto SWA;
- Collect and effectively manage leachate and waters collected from runoff and dewatering operations during excavation of BWA;

- Construct a multi-layer hazardous waste cap using innovative and cost-efficient materials over the limits of SWA and consolidated BWA;
- Inspect and monitor the effectiveness of landfill cap over time;
- Assess, control, collect, and treat landfill gas emissions by an active internal and perimeter gas collection system and thermal destruction system;
- Monitor landfill gas emissions to assess effectiveness of landfill gas collection and treatment system;
- Institute access restrictions and institutional controls on land use and groundwater;
- Install a chain link fence and/or physical barrier to prevent site access, injury, and/or exposure;
- Long-term monitoring of surface water, groundwater, air and leachate seeps;
- Perform long-term operation and maintenance activities throughout life of remedy; and
- Conduct five-year statutory reviews.

E. FIVE-YEAR REVIEW

The Site's first five-year review is scheduled to be completed in May 2010.

III. BASIS FOR THE DOCUMENT

Basis for Change: Updated Landfill Gas Sampling Results and Landfill Gas Modeling Data

Subsequently to EPA's issuing the ROD (with landfill gas sampling data collected in 1991 and 1992) for the Site, EPA in 2003 and Berger in 2004 collected additional Site landfill gas data. EPA and Berger took their individual landfill gas sampling results and ran these Site-specific results through Landfill Gas Generation Models approved by RIDEM, with EPA concurrence. Both of these modeling efforts resulted in concentrations that were less than the Human Health PRGs for Ambient Air set by the ROD. Also, the maximum methane concentration detected from the Berger 2004 landfill gas data collection activities was 0.035%, which is well below the lower explosive limit of 5%. Further, it appears that the results of the 2008 sampling rounds correlate to the landfill gas sampling results collected by Berger in 2004. Collectively, this information establishes the basis for modifying the ROD's requirement for thermal combustion of the landfill gas.

IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

A. Modification

The ESD's modification to the selected remedy in the ROD is summarized below.

The selected remedy in the ROD includes assessment, control, collection, and treatment of landfill gas emissions by an active internal and perimeter gas collection system and thermal destruction system to meet State and Federal regulatory standards.

The Berger 2004 landfill gas analytical sampling results, however, were below the State and Federal standards. In addition, modeling results for landfill gas analytical data collected in 2008 showed concentrations that are lower than the goals for ambient air set forth in the ROD.

Evaluation of the landfill gas collection and combustion system, as required in the ROD, was completed in 2004 during the Phase 2 Design for the Source Control remedy. A design team, including RIDEM and its design consultant, EPA, and an independent quality assessment team (IQAT), concluded that landfill gas (LFG) generation could be handled in a phased management approach. A design decision was made to build the LFG collection system such that it could be operated in either a passive (venting) or active (combustion) mode. This alternative LFG collection system was viewed by the design team to be in compliance with state and federal regulations and the air risk assessment performed by EPA. The LFG system can be operated to passively vent emissions through a series of vertical ventilation ports located on the landfill.

The LFG monitoring data collected in 2008 indicates that such a passive LFG management system, as an alternative construction and operating approach to that which was described in the ROD, will provide protection from the ambient air risks identified in the ROD and result in a significant cost savings in fuel and operational costs.

To ensure that State and Federal ambient air emission standards are being met, landfill gas sampling will be conducted at least quarterly at each of the on-Site landfill gas vents and the off-landfill monitoring probes, as outlined in the 2008 Long Term Monitoring Work Plan. If the analytical sampling results identify a risk to the nearby residents then the gas collection system can be converted from the current passive system to an active landfill gas collection system relatively quickly.

B. Landfill Gas Monitoring

A landfill gas monitoring and sampling plan is in place to assure protectiveness. Landfill gas sampling will be conducted at least quarterly at each of the landfill gas vents and off-landfill monitoring probes, as outlined in the 2008 Long Term Monitoring Work Plan. The landfill gas sampling results will be compared to ambient air criteria as outlined in the RIDEM Air Pollution Control Regulation Number 22 for Air Toxics. If the landfill gas results exceed the RIDEM ambient air criteria then the landfill gas results will be used as input values for the RIDEM SCREEN3 model. If the results of the modeling exceed RIDEM criteria, an expedited ambient air abatement program will be developed in coordination with EPA and RIDEM, as indicated in the approved Long Term Monitoring Plan for the site.

If ambient air monitoring or modeling identifies a risk to the nearby residents the constructed remedy can be converted from the current passive landfill gas migration system to an active landfill gas migration system. This is accomplished by having the proper valves, piping, and flanges already in place at two separate concreted pad locations, located on the northeast and southeast side of the landfill, where a hook up to blowers, flares and supplemental fuel supplies can be installed relatively quickly. The ambient air abatement

program, under RIDEM's lead and with EPA oversight, will specify the equipment necessary to switch from the current passive to active landfill gas collection mode.

C. Summary of Costs

The construction of the landfill cap coupled with the operation of this modified landfill gas collection system has resulted in approximately $847,000 in savings to the overall construction costs for the remedy (as estimated from documentation contained in the Phase 2 Remedial Action Report). Additionally, operation and maintenance costs for an active system would be significantly higher than for the passive system. However, if environmental sampling and modeling results show an unacceptable risk, resulting in a conversion of the system back to active mode, additional costs would be incurred, potentially offsetting the savings realized to date.

V. SUPPORT AGENCY COMMENTS

RIDEM has participated in developing EPA's modification to the remedy described herein and has expressed its support for the modification.

VI. STATUTORY DETERMINATIONS

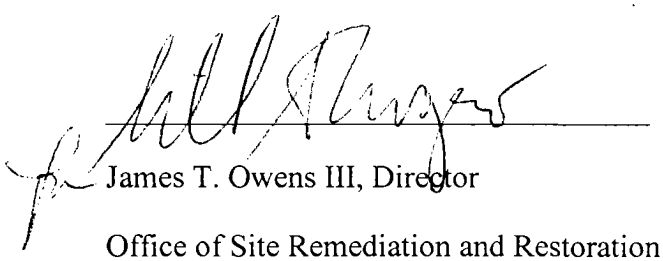
In accordance with Section 121 of CERCLA, EPA, in consultation with RIDEM, has determined that the modified remedy remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, meets the remedial action objectives specified in the ROD, and is cost-effective.

VII. PUBLIC PARTICIPATION COMPLIANCE

In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, this ESD and supporting documentation shall become part of the Administrative Record for the Site, which is available for public review at the locations, and times listed in Section I(E) above. A public notice, which summarizes the modifications to the remedy, as set forth in the ESD shall be published in a local newspaper of general circulation following the signing of this ESD.

VIII. APPROVAL OF EXPLANATION OF SIGNIFICANT DIFFERENCES

So approved:



James T. Owens III, Director

9-18-08

Date

Office of Site Remediation and Restoration

APPENDIX A

Table 1 (excerpted Table 4.22 from 2004 Final Cap Design Report) Discussing Range of Conditions Modeled for Gas Generation at the Site

Range of Conditions Modeled

(NOTE: The discussion provided below is taken in part from 2004 Final Cap Design Report by Louis Berger Group, December 2004)

A number of possible changes are needed to the EPA's Rose Hill LandGEM modeling, primarily the increased landfill volume from waste relocated from the BWA. Further, a maximum and minimum estimate of gas generation is needed to establish design and monitoring parameters. When definite information is lacking, it is helpful to frame the conditions using a sensitivity analysis. The low range of gas generation is useful in determining the likelihood of sufficiently small gas and COPC emissions that may indicate that an active gas treatment program is not needed. The other extreme is used to size the collection system so that it can be made active. The parameter variances are discussed below. The generation scenarios used are as follows:

- Model 1 – A Case Study for Demonstration of US EPA Guidance for Evaluating Landfill Gas Emissions at Superfund Sites," dated February 2003 (EPA2003)

- Model 2 – Revised Landfill Capacity using CAA constants, predicating high generation rates.

- Model 3 – Revised Landfill Capacity using AP-42 constants, predicating low generation rates.

- Model 4 – Revised Landfill Capacity using the waste moisture (k) value for wet climates suggested by EPA's LMOP program, and the organic content L_o value established by AP-42.

The results of the four gas models summarized in Table 1 (below) confirm the intuitive result. Model 2, using input values of higher waste moisture (k) and higher organic content (L) in the waste, shows the highest landfill gas generation rates. Model 1 run by the EPA is similar but since it was not reflective of the final landfill configuration and waste quantity, the gas generation rates are less. Model 3, the preferred model, assumes both lower moisture and organic content and results in a lower landfill gas generation rate. This is the most appropriate model to use based upon the low organic content found in the waste. The gas generation rate may even be less given the very low organic content measured. Model 4 assumes the Model 3 organic content, but a very high moisture content that may be typical of the Rhode Island climate. This causes a much higher rate of initial waste decomposition and gas generation, but a lower gas generation rate for the long term. To be conservative in the gas collection system design we did not use this model, in favor of the higher longer-term rate predicted by Model 3. This also gives credence to the hypothesis that lower gas emission rates may be possible and allows the system to operate passively.

Table 1: A summary of the four models.

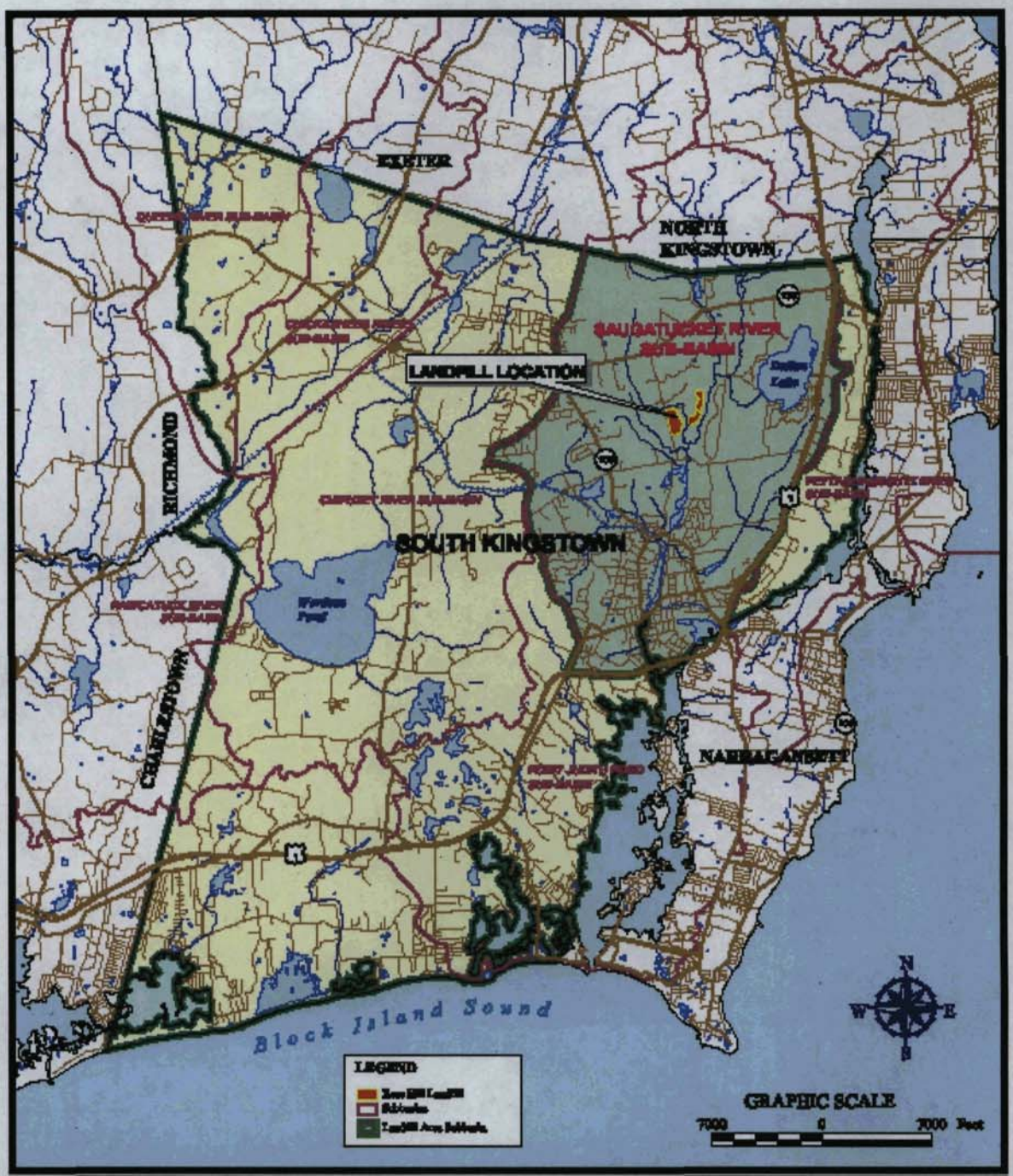
Table 1 Rose Hill Landfill Summary of Landfill Gas Models						
Notes	**Model Parameter Assumptions**	**Model 1 EPA 2003**	**Model 2 CAA High Value**	**Model 3 AP-42 Low Value**	**Model 4 Wet Climate Value**	**Units**
1	Opened Year	1967	1967	1967	1967	----
2	Closure Year	1982	1982	1982	1982	----
3	Waste-In-Place	362,000	660,000	660,000	660,000	tons
4	k	0.05	0.05	0.04	0.065	yr-1
5	L_o	170	170	100	100	MG/yr
6	Peak Gas Rate	1,651	3,006	1,505	2,051	cfm
	2005 Gas Rate	523	952	600	460	cfm
	2035 Gas Rate	117	212	181	65	cfm

Notes:

1. EPA ROD
2. EPA ROD
3. Model 1, Generic Estimate of 197,000 Mg at a waste density of 1200 lbs/cy. Models 2, 3, and 4 were calculated volumes at a waste density of 1200 lbs/cy.
4. CAA 0.05, AP42 0.04, LMOP wet climates 0.065
5. CAA 170, AP42 100
6. Peak gas generation occurred in 1982, when the landfill stopped receiving waste.

APPENDIX B

Site Figures



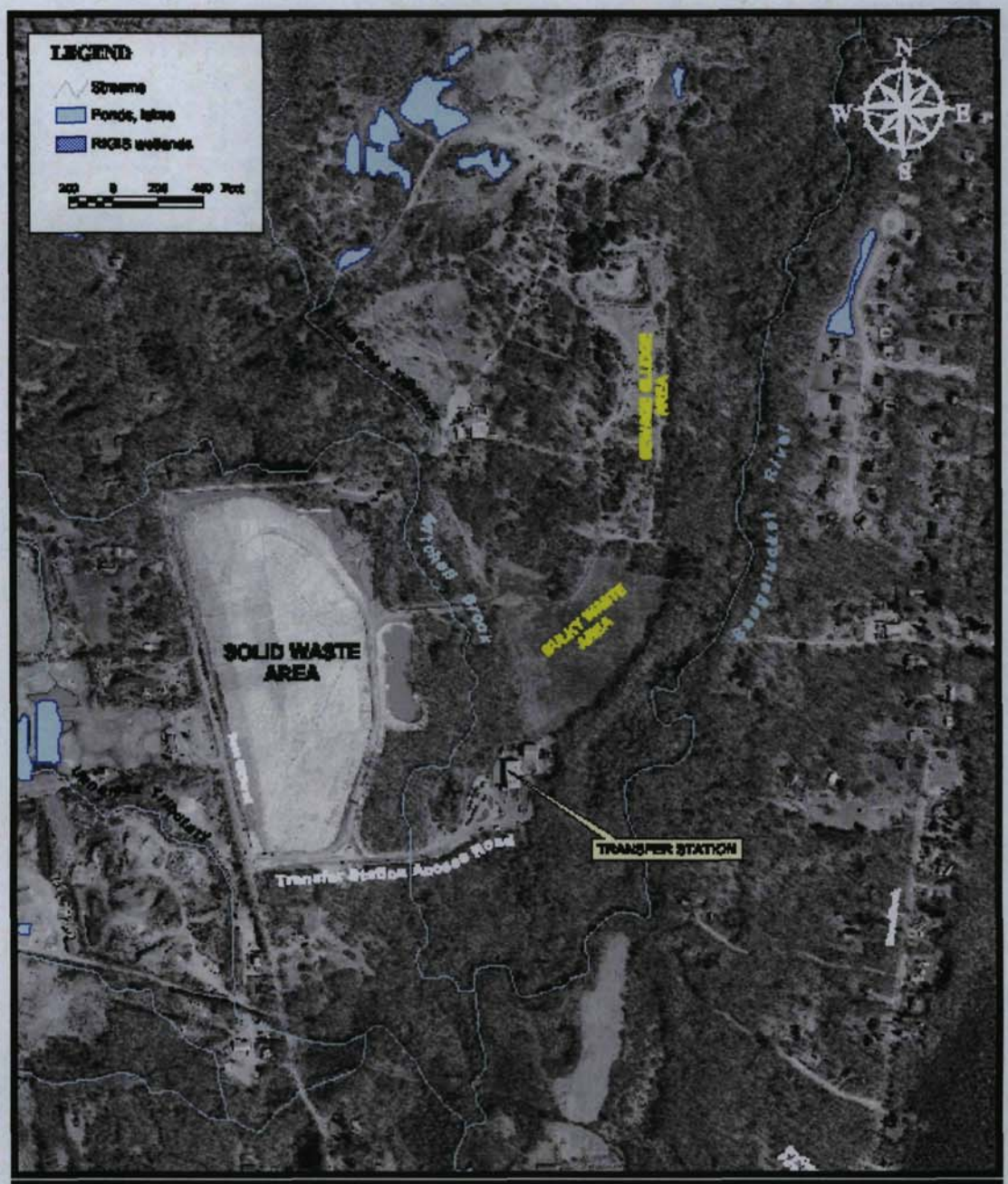
RI Department of Environmental Management

The Louis Berger Group, Inc.

Remedial Action – Rose Hill Landfill

Figure 1: SITE LOCATION MAP

November 2007



RI Department of Environmental Management

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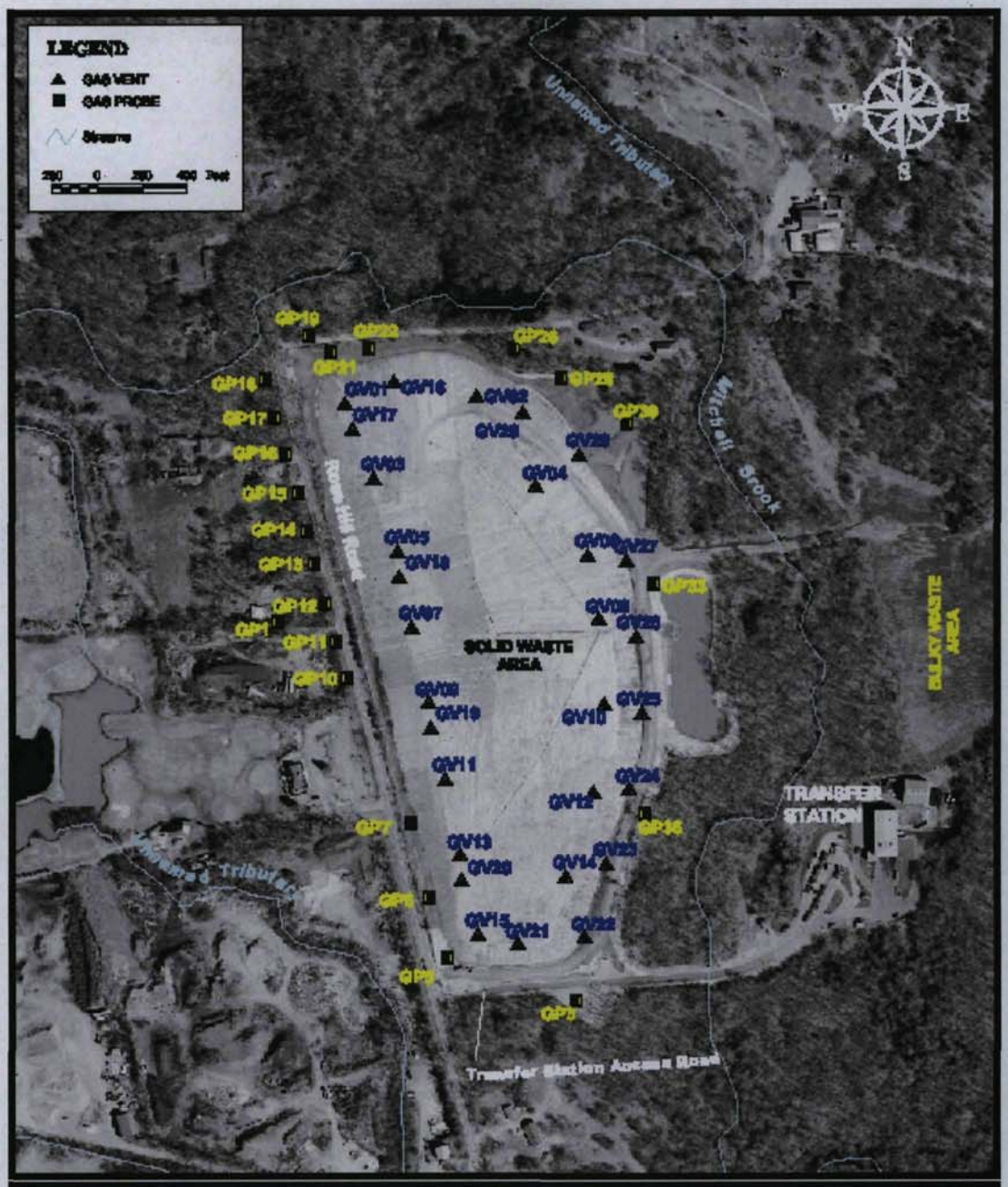
Figure 2: SITE AERIAL EXISTING FEATURES MAP



RI Department of Environmental Management

The Louis Berger Group, Inc.

Remedial Action - Rose Hill Landfill

Figure 5: POST CLOSURE MONITORING PROGRAM LANDFILL GAS

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APPENDIX C

Amendment to Action–Specific ARARs

Additional Action-Specific ARARs

Action-Specific ARARs: Air			
Requirement	Status	Synopsis	Action to be Taken
Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities, EPA 600/R05/123a (September 2005)	To Be Considered	Provides guidance for conducting an air pathway analysis for landfill gas emissions and provides procedures for evaluating emissions to ambient air, subsurface vapor migration due to landfill gas pressure gradients, and subsurface vapor intrusion into buildings.	Landfill gas emissions will be evaluated consistent with this guidance.

APPENDIX D

State Concurrence Letter

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

September 18, 2008

Mr. James T. Owens, Director
USEPA – New England, Region 1
Office of Site Remediation and Restoration
1 Congress Street – Suite 1100
Boston, MA 02114-2023

RE: Rose Hill Regional Landfill Superfund Site, South Kingstown, Rhode Island

Dear Mr. Owens:

The Office of Waste Management has conducted a review of the *Draft Explanation of Significant Differences* (ESD), dated September 2008, for the Rose Hill Regional Landfill Superfund Site located in South Kingstown, Rhode Island. As a result of this review, the Department is in favor of proceeding within the framework of this ESD.

If you have any questions please feel free to contact Matthew DeStefano of my staff at (401) 222-2797, extension 7141.

Sincerely,

Terrence D. Gray, Assistant Director of Air, Waste and Compliance
Dept. of Environmental Management

cc: L. Hellested, RIDEM OWM
M. DeStefano, RIDEM OWM
G. Jablonski, RIDEM OWM
L. Brill, USEPA OSRR
M. Jasinski, USEPA OSRR
D. Newton, USEPA OSRR